WIPER AND WASHER SYSTEMS



- 1. General Description
- 2. Relay and Fuse
- 3. Wiper and Washer System
- 4. Combination Switch (Wiper)
- 5. Washer Tank and Motor
- 6. Wiper Blade
- 7. Front Wiper Arm
- 8. Front Wiper Motor and Link
- 9. Front Washer
- 10. Wiper Relay Unit

WIPER AND WASHER SYSTEMS > General Description

CAUTION

- When performing service operation, refer to "Repair Contents" in "General Description". Ref. to REPAIR CONTENTS>Repair Contents.
- When performing work on the sensors or modules, be careful of the following.
 - Before disconnecting connectors, be sure to disconnect the ground terminal from the battery sensor.
 Ref. to REPAIR CONTENTS>NOTE > BATTERY.
 - Do not apply any impact. If the parts are accidentally dropped, replace with a new part.
 - Do not expose to high-temperature and humidity.
- When replacing the parts provided with memory functions, record the memory contents before disconnecting the ground terminal from the battery sensor.
- Refer to "CAUTION" of "General Description" in "AIRBAG SYSTEM" section. Ref. to AIRBAG SYSTEM Section. Ref. to AIRBAG SYSTEM Section.
- When connecting the washer hoses, be careful not to cause bend or blockage.
- Do not let oil and grease adhere to the washer tank and washer fluid passage. Even a small amount of adherence will form an oil film on the glass, causing the wiper to chatter and judder.

WIPER AND WASHER SYSTEMS > General Description

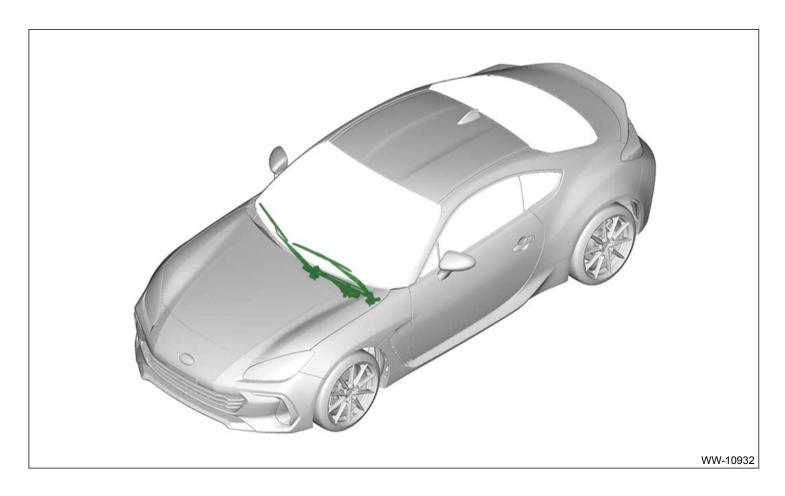
SPECIFICATION

Front winer meter	Motor type	Magnet type
Front wiper motor	Input	12 V — 60 W or less
Front wood or marker	Pump type	Centrifugal
Front washer motor	Input	12 V — 72 W or less

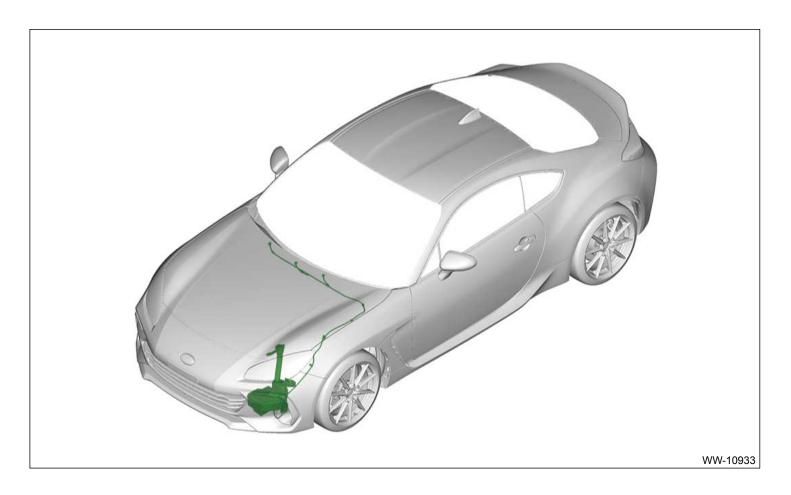
WIPER AND WASHER SYSTEMS > General Description

LOCATION

1. WIPER SYSTEM



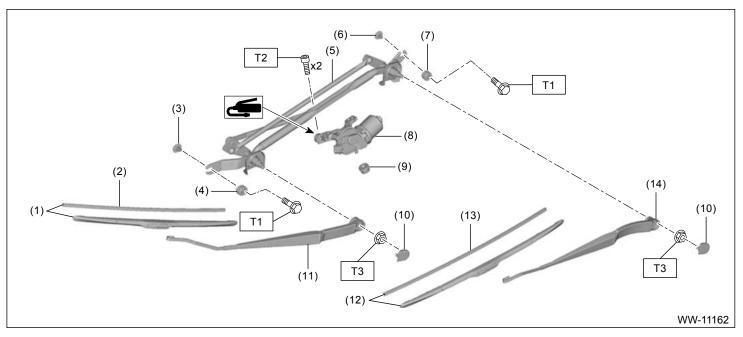
2. WASHER SYSTEM



WIPER AND WASHER SYSTEMS > General Description

COMPONENT

1. FRONT WIPER



(1)	Blade ASSY windshield wiper assistor	(8)	Motor ASSY windshield wiper	Tightening torque: N·m (kgf-m, ft-lb)
(2)	Rubber ASSY windshield wiper assistor	(9)	Cushion windshield wiper	T1: 6 (0.6, 4.4)
(3)	Collar	(10)	Cover windshield wiper arm	T2: 7.5 (0.8, 5.5)
(4)	Rubber	(11)	Arm ASSY windshield wiper assistor	T3: 22 (2.2, 16.2)
(5)	Link ASSY windshield wiper	(12)	Blade ASSY windshield wiper driver	
(6)	Collar	(13)	Rubber ASSY windshield wiper driver	

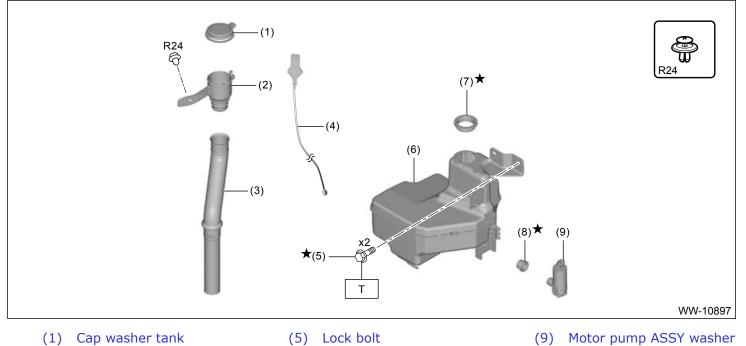
(14) Arm ASSY windshield wiper

driver

2. WASHER TANK & HOSE

• WASHER TANK

(7) Rubber



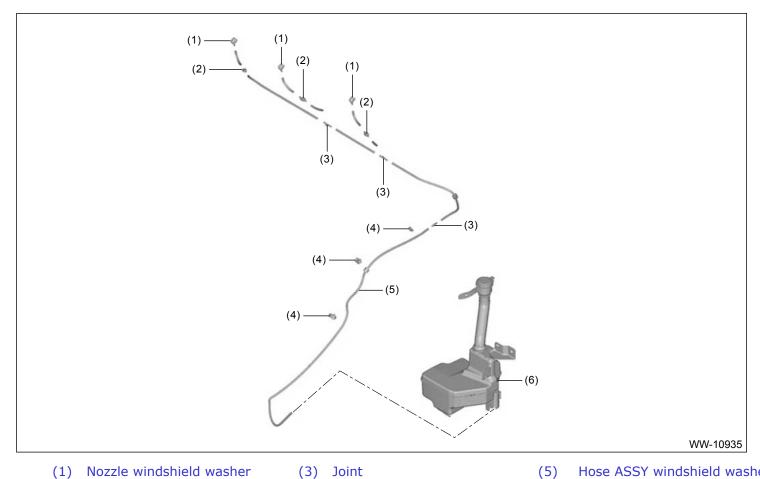
- Inlet tank (2)
- (3) Hose inlet
- (4) Level gauge

- (6) Tank washer
- (7) Packing inlet
- (8) Packing

Tightening torque: N·m (kgf-m, ft-lb)

T: 6 (0.6, 4.4)

• FRONT WASHER HOSE



(1) Nozzle windshield washer

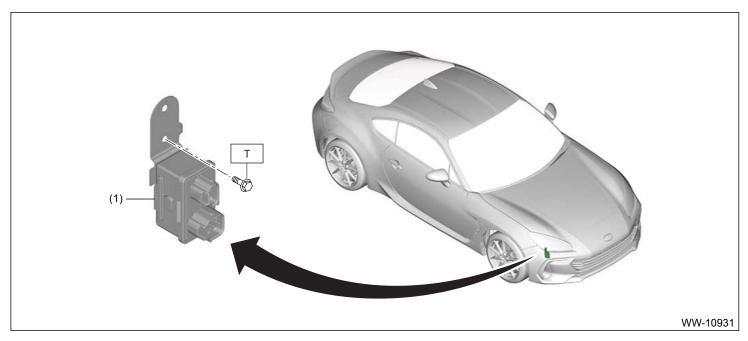
(2) Check valve windshield

- (4) Clip

- (5) Hose ASSY windshield washer
- (6) Washer tank ASSY

3. WIPER RELAY UNIT

washer



(1) Wiper relay unit

Tightening torque: $N \cdot m$ (kgf-m,

ft-lb)

T: 7.5 (0.8, 5.5)

WIPER AND WASHER SYSTEMS > General Description

PREPARATION TOOL

1. SUBARU SPECIAL TOOL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
	_	SUBARU SELECT	Used for setting of each function and
		MONITOR 4	troubleshooting for electrical system.
			Note:
			• For detailed operation
			procedures, refer to "Help" of application.
			Used together with interface
			for Subaru Select Monitor
STSSM4			(such as DST-i and DST-010).

2. OTHER

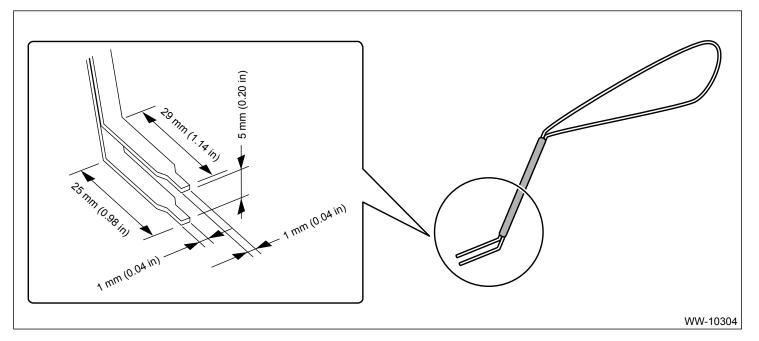
	REMARKS
Circuit tester	Used for measuring resistance, voltage and current.
TORX [®] T30	Used for removing and installing the wiper motor.

3. HANDMADE TOOL

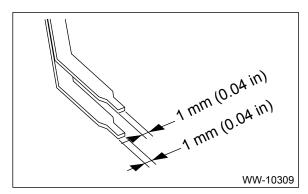
• WASHER NOZZLE ADJUSTMENT JIG

Note:

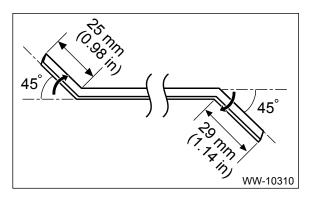
Refer to the data described below, prepare the materials to make a washer nozzle adjustment tool.



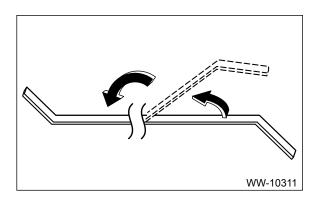
- 1. Prepare the vertebra of wiper blade which is to be discarded and vinyl tape.
- 2. Grind the vertebra edge until the width becomes 1 mm (0.04 in).

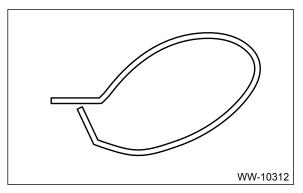


- 3. Bend the vertebra at the position 25 mm (0.98 in) away from its end by 45°.
- 4. Bend the vertebra at the position 29 mm (1.14 in) away from the other end by 45°.

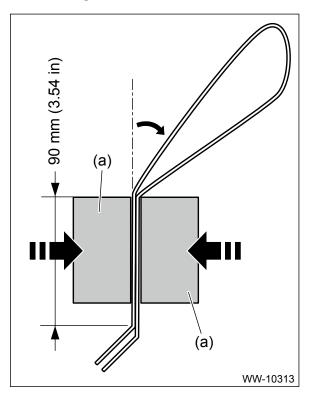


5. Double up the vertebra so that the longer end (29 mm (1.14 in)) comes upward.

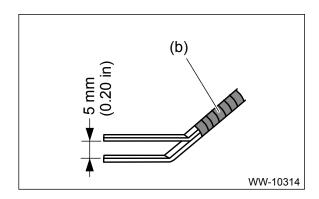




- **6.** Secure the vertebra with a vise (a) so that the tip clearance between upper and lower becomes 5 mm (0.2 in).
- 7. Bend the vertebra at the position approximately 90 mm (3.54 in) away from the bending point for the longer end.



8. Check that the tip clearance between upper and lower is 5 mm (0.2 in), and secure the vertebra with vinyl tape (b).



WIPER AND WASHER SYSTEMS > Relay and Fuse

LOCATION

For the location, refer to "FUSE AND RELAY" in the wiring diagram. Ref. to WIRING SYSTEM>Fuse And Relay.

Note:

For details of relay and fuse, refer to "DC POWER SUPPLY CIRCUIT". Ref. to WIRING SYSTEM>Power Supply Circuit.

WIPER AND WASHER SYSTEMS > Relay and Fuse

INSPECTION

1. CHECK FUSE

- 1. Remove the fuse and inspect visually.
- 2. If the fuse is blown out, replace the fuse.

2. CHECK RELAY

1. Measure the resistance between relay terminals.

Terminal No.	Inspection conditions	Standard	Circuit
	Always	1 MΩ or more	
1 — 4	Apply battery voltage between terminals 2 and 3.	Less than 1 Ω	1 4 0 0 1 2 3 4 2 0 0 3 AC-02796

2. Replace the relay if the inspection result is not within the standard value.

WIPER AND WASHER SYSTEMS > Wiper and Washer System

WIRING DIAGRAM

For the wiring diagram, refer to "Front Wiper and Washer System" in the wiring diagram. Ref. to WIRING SYSTEM>Front Wiper and Washer System>WIRING DIAGRAM.

WIPER AND WASHER SYSTEMS > Wiper and Washer System

INSPECTION

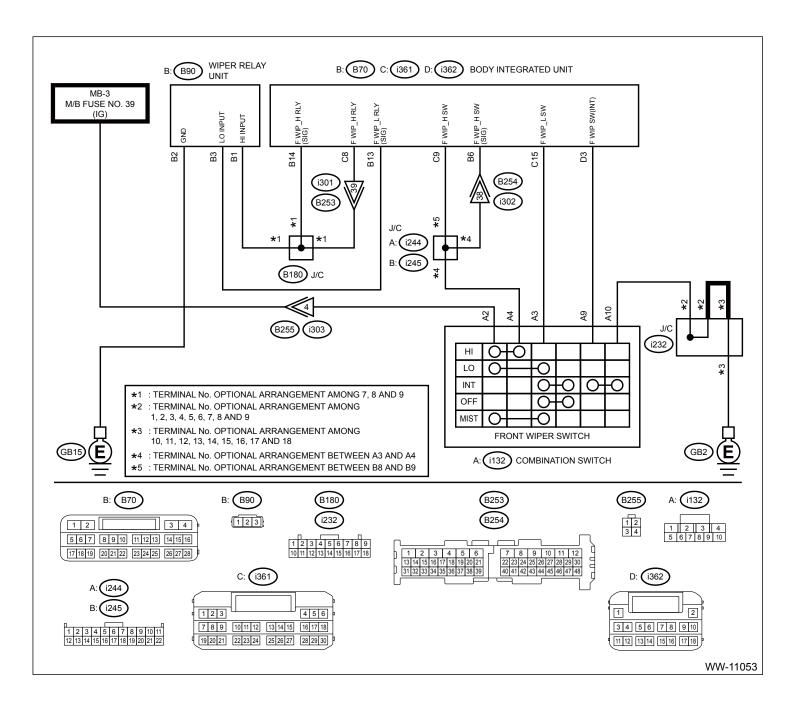
1. TROUBLE SYMPTOM

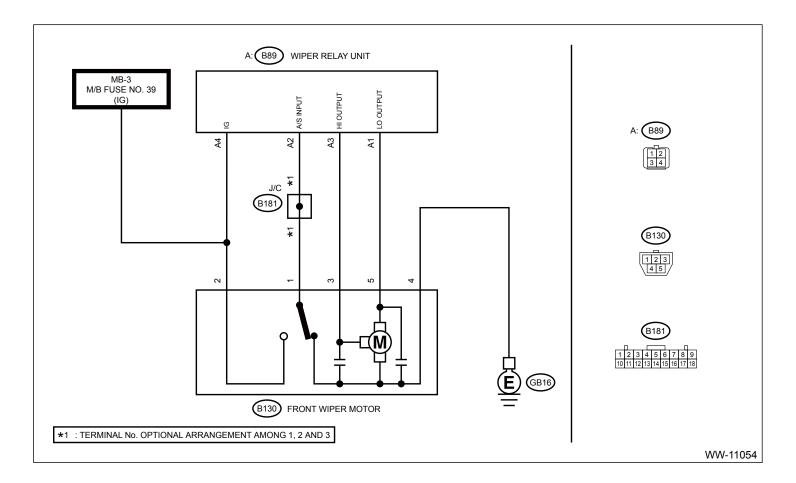
Symptoms	Repair order
Wipers do not operate when the wiper switch is in	Ref. to WIPER AND WASHER SYSTEMS>Wiper
INT, LO or HI.	and Washer System>INSPECTION > WIPERS DO
	NOT OPERATE WHEN THE WIPER SWITCH IS IN
	INT, LO OR HI.
Washer motor does not operate	1. Switch assembly combination wiper
	2. Motor pump assembly washer
	3. Wiring harness
Wipers do not operate when washer switch is ON	1. Wiper relay unit
	2. Motor assembly windshield wiper
	3. Wiring harness
	4. Body integrated unit
Washer fluid spray does not operate properly	1. Motor pump assembly washer
	2. Hose assembly windshield washer
	3. Nozzle windshield washer
Wiper chatters or judders during operation	1. Oil film and dirt on the glass
	2. Arm assembly windshield wiper
	3. Motor assembly windshield wiper

2. WIPERS DO NOT OPERATE WHEN THE WIPER SWITCH IS IN INT, LO OR HI

Wiring diagram:

Front wiper and washer system Ref. to WIRING SYSTEM>Front Wiper and Washer System>WIRING DIAGRAM.





1. CHECK DTC.



- 1. Turn the ignition switch to ON.
- 2. Read the DTC of [Body Control] using the Subaru Select Monitor. Ref. to COMMON (DIAGNOSTICS)>Diagnostic Trouble Code (DTC).

Is DTC displayed?



Perform the diagnosis for the displayed DTCs. Ref. to BODY CONTROL(DIAGNOSTICS)>Diagnostic Trouble Code (DTC)>LIST.



60 to 2.

2. CHECK POWER SUPPLY.



Using the Subaru Select Monitor, display the following items in the [Data monitor] of [Body Control].

Ref. to COMMON (DIAGNOSTICS)>Data Monitor.

- [BATT voltage (control)]
- [BATT voltage (BACKUP)]
- [IGN voltage]

Is the voltage 9 - 16 V?







Check the body integrated unit and replace it if defective.

- Inspection: Ref. to BODY CONTROL(DIAGNOSTICS)>Basic Diagnostic Procedure.
- Replacement: Ref. to BODY CONTROL/COMMUNICATION SYSTEM>Body
 Integrated Unit.

3. CHECK BODY INTEGRATED UNIT.



Using the Subaru Select Monitor, display the following items in the [Data monitor] of [Body Control].

Ref. to COMMON (DIAGNOSTICS)>Data Monitor.

- [Front wiper Low switch input]
- [Front wiper High switch input]
- [Front Wiper INT Switch Input]

Does the indication change between $[ON] \longleftrightarrow [OFF]$ according to the switch operation?



Go to 7.



Perform unit inspection of the combination switch (wiper). Ref. to WIPER AND WASHER SYSTEMS>Combination Switch (Wiper)>INSPECTION > INSPECTION OF SWITCH UNIT.

- If faulty: Replace the combination switch (wiper). Ref. to WIPER AND WASHER SYSTEMS>Combination Switch (Wiper).
- If not faulty: Go to 4.



- 1. Turn the ignition switch to OFF.
- 2. Disconnect the body integrated unit and the combination switch (wiper) connector.
- **3.** Check the harness between body integrated unit and combination switch (wiper).

Connector & terminal

```
(B70) No. 6 — (i132) No. 4:
(i361) No. 9 — (i132) No. 4:
(i361) No. 15 — (i132) No. 3:
(i362) No. 3 — (i132) No. 9:
```

Is harness normal?

Yes

If checking LO or HI: Go to 5.

If checking INT: Go to 6.

No

Repair or replace the defective part.

5. HARNESS INSPECTION (IF CHECKING LO OR HI).



- 1. Turn the ignition switch to ON.
- 2. Measure the voltage between the combination switch (wiper) connector and the chassis ground.

Connector & terminal

```
(i132) No. 2 (+) — Chassis ground (-):
```

Is the voltage 9 V or more?

Yes

Check the body integrated unit and replace it if defective.

- Inspection: Ref. to BODY CONTROL(DIAGNOSTICS)>Basic Diagnostic Procedure.
- Replacement: Ref. to BODY CONTROL/COMMUNICATION SYSTEM>Body Integrated Unit.

No

Repair or replace the defective part.

6. HARNESS INSPECTION (IF CHECKING INT).



- 1. Turn the ignition switch to OFF.
- 2. Check the harness between the combination switch (wiper) connector and the chassis ground.

Connector & terminal

(i132) No. 10 — Chassis ground:

Is the resistance less than 10 Ω ?



Check the body integrated unit and replace it if defective.

- Inspection: Ref. to BODY CONTROL(DIAGNOSTICS)>Basic Diagnostic Procedure.
- Replacement: Ref. to BODY CONTROL/COMMUNICATION SYSTEM>Body Integrated Unit.

No

Repair or replace the defective part.

7. CHECK BODY INTEGRATED UNIT.



- 1. Turn the ignition switch to OFF.
- 2. Connect the body integrated unit and the combination switch (wiper) connector.
- **3.** Turn the ignition switch to ON.
- **4.** Using the Subaru Select Monitor, display the following items in the [Data monitor] of [Body Control]. Ref. to COMMON (DIAGNOSTICS)>Data Monitor.
 - [Front wiper Low output]
 - [Front wiper High output]

Does the indication display [ON] according to the switch operation?

Yes

Inspect the wiper relay unit. Ref. to WIPER AND WASHER SYSTEMS>Wiper Relay Unit>INSPECTION.

- If faulty: Replace the wiper relay unit. Ref. to WIPER AND WASHER SYSTEMS>Wiper Relay Unit.
- If not faulty: Go to 8.

No

Check the body integrated unit and replace it if defective.

- Inspection: Ref. to BODY CONTROL(DIAGNOSTICS)>Basic Diagnostic Procedure.
- Replacement: Ref. to BODY CONTROL/COMMUNICATION SYSTEM>Body Integrated Unit.



- 1. Turn the ignition switch to OFF.
- 2. Disconnect the connectors of body integrated unit and wiper relay unit.
- 3. Check the harness between body integrated unit and wiper relay unit.

Connector & terminal

```
(B70) No. 13 — (B90) No. 3:
(B70) No. 14 — (B90) No. 1:
(i361) No. 8 — (B90) No. 1:
```

Is harness normal?



Go to 9.



Repair or replace the defective part.

9. CHECK HARNESS.



Check the harness between wiper relay unit connector and chassis ground.

Connector & terminal

(B90) No. 2 — Chassis ground:

Is the resistance less than 10 Ω ?



Go to 10.



Repair or replace the defective part.



- 1. Turn the ignition switch to ON.
- 2. Measure the voltage between the wiper relay unit connector and chassis ground.

Connector & terminal

```
(B89) No. 4(+) — Chassis ground (-):
```

Is the voltage 9 V or more?



@ Go to 11.



Repair or replace the defective part.

11. CHECK HARNESS.



- Turn the ignition switch to OFF.
- **2.** Disconnect the front wiper motor connector.
- **3.** Check the harness between the wiper relay unit and the front wiper motor.

Connector & terminal

```
(B89) No. 1 — (B130) No. 5:
(B89) No. 2 — (B130) No. 1:
(B89) No. 3 — (B130) No. 3:
```

Is harness normal?







Repair or replace the defective part.



Check the harness between the front wiper motor connector and the chassis ground.

Connector & terminal

(B130) No. 4 — Chassis ground:

Is the resistance less than 10 Ω ?



Check the front wiper motor. <a>Ref. to WIPER AND WASHER SYSTEMS>Front Wiper Motor and Link>INSPECTION.



Repair or replace the defective part.

WIPER AND WASHER SYSTEMS > Wiper and Washer System

NOTE

For procedure of components of the wiper and washer system, refer to the sections below.

- Combination switch (wiper): Ref. to WIPER AND WASHER SYSTEMS>Combination Switch (Wiper).
- Washer tank and motor: Ref. to WIPER AND WASHER SYSTEMS>Washer Tank and Motor.
- Wiper blade: Ref. to WIPER AND WASHER SYSTEMS>Wiper Blade.
- Front wiper arm: Ref. to WIPER AND WASHER SYSTEMS>Front Wiper Arm.
- Front wiper motor and link: Ref. to WIPER AND WASHER SYSTEMS>Front Wiper Motor and Link.
- Front washer: Ref. to WIPER AND WASHER SYSTEMS>Front Washer.
- Wiper relay unit: Ref. to WIPER AND WASHER SYSTEMS>Wiper Relay Unit.
- Body integrated unit: Ref. to BODY CONTROL/COMMUNICATION SYSTEM>Body Integrated Unit.

WIPER AND WASHER SYSTEMS > Combination Switch (Wiper)

REMOVAL

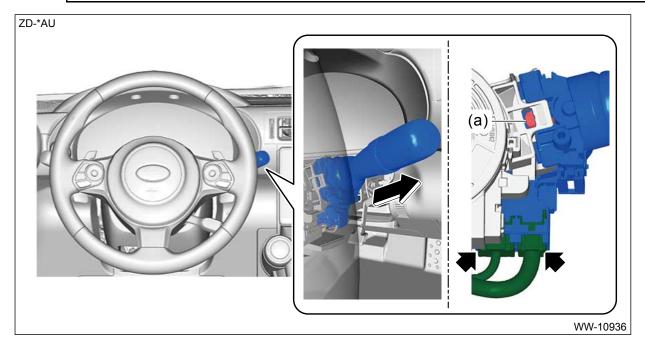
Caution:

Before handling the airbag system components, refer to "CAUTION" of "General Description" in "AIRBAG SYSTEM". Ref. to AIRBAG SYSTEM>General Description>CAUTION.

- 1. Disconnect the ground terminal from the battery sensor, and wait for at least 60 seconds before starting work. Ref. to REPAIR CONTENTS>NOTE > BATTERY.
- 2. Turn the steering wheel assembly to right and left, remove the screws, and remove the column cover assembly. Ref. to POWER ASSISTED SYSTEM (POWER STEERING)>Steering Column>REMOVAL.
- **3.** Remove the switch assembly combination wiper.
 - (1) Disconnect connectors.
 - (2) Press the claws (a), and remove the switch assembly combination wiper as shown in the figure.

Caution:

Do not press the claws with excessive force. They may be damaged.



WIPER AND WASHER SYSTEMS > Combination Switch (Wiper)

INSTALLATION

Caution:

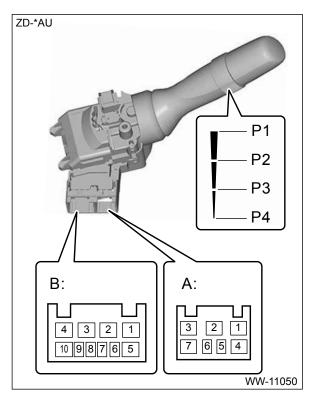
Before handling the airbag system components, refer to "CAUTION" of "General Description" in "AIRBAG SYSTEM". Ref. to AIRBAG SYSTEM>General Description>CAUTION.

- 1. Install the switch assembly combination wiper, and connect each connector.
- 2. Install the column cover assembly. Ref. to POWER ASSISTED SYSTEM (POWER STEERING)>Steering Column>INSTALLATION.
- **3.** Connect the ground terminal to battery sensor. <a> Ref. to REPAIR CONTENTS > NOTE > BATTERY.

INSPECTION

1. INSPECTION OF SWITCH UNIT

1. Measure the resistance between connector terminals.



• Wiper switch

Terminal No.	Inspection conditions	Standard	
B2 — B3	OFF	1 M Ω or more	
B2 — B4			
B2 — B3	MIST	Less than 1 Ω	
B2 — B3	LO	Less than 1 Ω	
B2 — B4	HI	Less than 1 Ω	
B9 — B10	INT	Less than 1 Ω	

Washer switch

Terminal No.	Inspection conditions	Standard
A3 — A2	ON	Less than 1 Ω

• Volume switch

Terminal No.	Inspection conditions	Standard
B7 — B8	P1	Less than 1 Ω
	P2	Approx. 2 kΩ
	Р3	Approx. 4 kΩ

|--|

2. Replace the switch assembly combination wiper if the inspection result is not within the standard value.

2. CHECK INTERMITTENT OPERATION OF SWITCH

- **1.** Turn the ignition switch to ON.
- 2. Operate the combination switch (wiper) to the INT position.
- **3.** Check the stop duration during intermittent operation when intermittent control switch is in FAST and SLOW.

Intermittent stationary time

FAST: Approx. 2 seconds SLOW: Approx. 25 seconds

- If faulty: Go to step 4.
- If not faulty: Switch intermittent operation is normal.
- **4.** Inspect the switch assembly combination wiper.
 - If faulty: Replace the switch assembly combination wiper.
 - If not faulty: Go to step 5.
- **5.** Check the harness.
 - If faulty: Repair or replace the defective part.
 - If not faulty: Replace the body integrated unit.

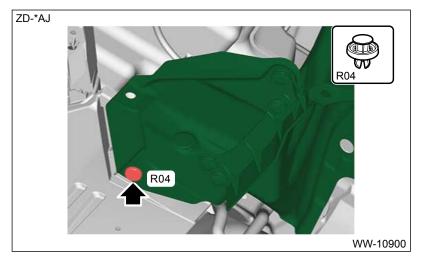
WIPER AND WASHER SYSTEMS > Washer Tank and Motor

REMOVAL

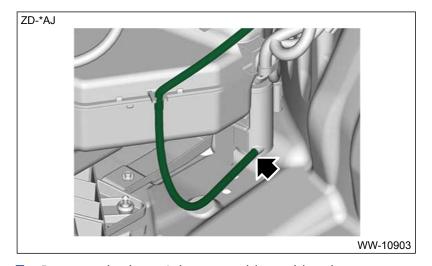


1. WASHER TANK

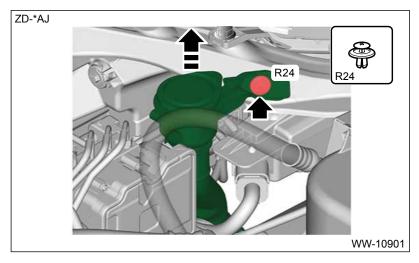
- 1. Disconnect the ground terminal from battery sensor. Ref. to REPAIR CONTENTS > NOTE > BATTERY.
- 2. Remove the bumper face front. Ref. to EXTERIOR/INTERIOR TRIM>Front Bumper>REMOVAL.
- **3.** Remove the clips, and turn over the mud guard front LH.



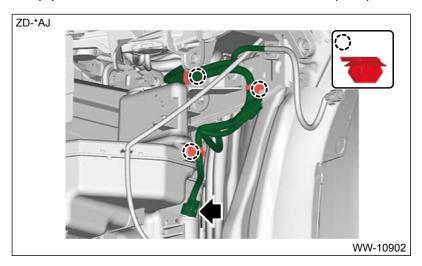
4. Prepare a container before disconnecting the hose assembly windshield washer, and drain all the washer fluid.



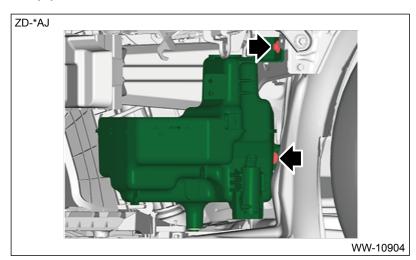
- 5. Remove the hose inlet assembly and level gauge.
 - (1) Remove the clip.
 - (2) Pull out the hose inlet assembly and level gauge in the direction of arrow shown in the figure.



- 6. Remove the washer tank assembly.
 - (1) Disconnect the connector of the motor pump assembly washer and remove the harness clip.



- (2) Remove the hose assembly windshield washer from the clamps of the tank washer.
- (3) Remove the bolts and remove the washer tank assembly.



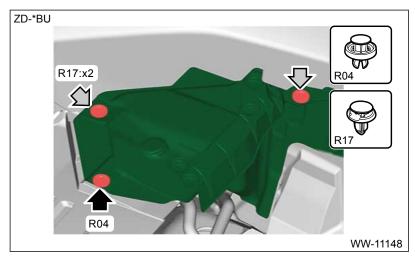
7. Remove the motor pump assembly washer. Ref. to WIPER AND WASHER SYSTEMS>Washer Tank and Motor>REMOVAL > WASHER MOTOR PUMP.

Note:

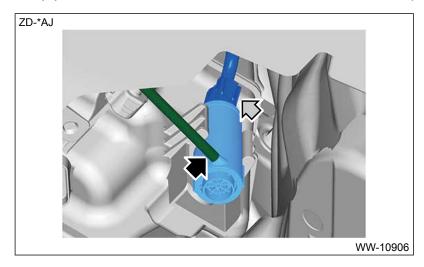
Perform this procedure only when required.

2. WASHER MOTOR PUMP

- 1. Disconnect the ground terminal from battery sensor. <a> Ref. to REPAIR CONTENTS>NOTE > BATTERY.
- 2. Lift up the vehicle.
- 3. Remove the clips, and turn over the mud guard front LH.



- 4. Remove the motor pump assembly washer.
 - (1) Prepare a container before disconnecting the hose assembly windshield washer, and drain all the washer fluid.
 - (2) Disconnect the connector, and remove the motor pump assembly washer.



WIPER AND WASHER SYSTEMS > Washer Tank and Motor

INSTALLATION

1. WASHER TANK

- 1. Install the motor pump assembly washer. Ref. to WIPER AND WASHER SYSTEMS>Washer Tank and Motor>INSTALLATION > WASHER MOTOR PUMP.
- 2. Using new lock bolts, install the washer tank assembly.

Tightening torque:

6 N·m (0.6 kgf-m, 4.4 ft-lb)

- **3.** Connect the hose assembly windshield washer and install it to the tank washer clamp.
- 4. Connect the motor pump assembly washer connector and install the harness clip.
- **5.** Using a new packing inlet, install the hose inlet assembly and level gauge.
- 6. Add new washer fluid.
- 7. Install the mud guard front LH. <a>Ref. to EXTERIOR/INTERIOR TRIM>Mud Guard>INSTALLATION.
- 8. Install the bumper face front. Ref. to EXTERIOR/INTERIOR TRIM>Front Bumper>INSTALLATION.
- **9.** Connect the ground terminal to battery sensor. Ref. to REPAIR CONTENTS > NOTE > BATTERY.

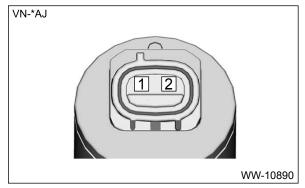
2. WASHER MOTOR PUMP

- 1. Using new packing, install the motor pump assembly washer.
- 2. Connect the hose assembly windshield washer and the motor pump assembly washer connector.
- 3. Lower the vehicle.
- 4. Add new washer fluid.
- 5. Install the mud guard front LH. <a>Ref. to EXTERIOR/INTERIOR TRIM>Mud Guard>INSTALLATION.
- 6. Connect the ground terminal to battery sensor. Ref. to REPAIR CONTENTS>NOTE > BATTERY.

WIPER AND WASHER SYSTEMS > Washer Tank and Motor

INSPECTION

1. Check the motor operation when battery voltage is applied between the connector terminals.



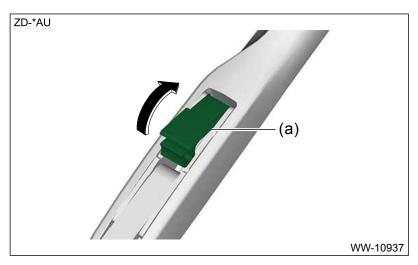
Terminal No.	Inspection conditions	Specification
1 (+) — 2 (-)	Apply battery voltage.	Rotation

2. If it does not operate normally, replace the motor pump assembly washer.

WIPER AND WASHER SYSTEMS > Wiper Blade

REMOVAL

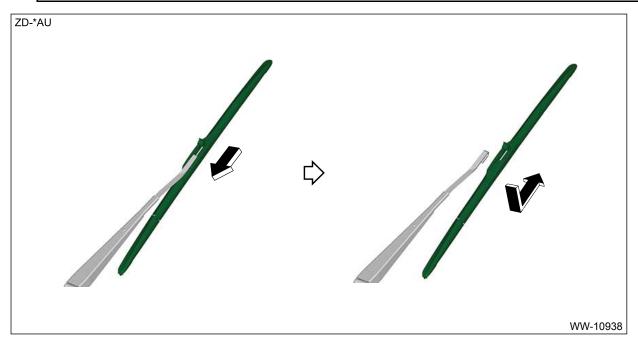
1. Pull up the blade assembly windshield wiper holder (a) as shown in the figure.



- 2. Pull the blade assembly windshield wiper in the arrow direction.
- **3.** Remove the blade assembly windshield wiper from the arm assembly windshield wiper as shown in the figure.

Caution:

To avoid damaging the windshield glass, place a cloth between the windshield glass and the arm assembly windshield wiper.



WIPER AND WASHER SYSTEMS > Wiper Blade

INSTALLATION

- 1. Install the blade assembly windshield wiper on the arm assembly windshield wiper.
- 2. Install the blade assembly windshield wiper holder.

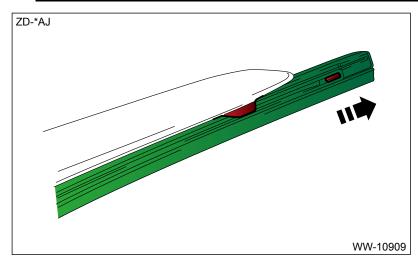
WIPER AND WASHER SYSTEMS > Wiper Blade

DISASSEMBLY

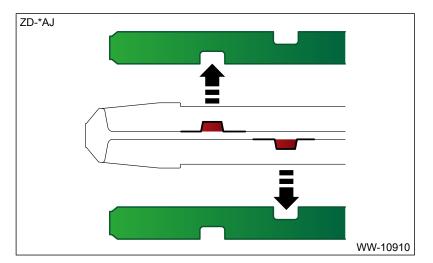
1. Pull out the rubber assembly windshield wiper from blade assembly windshield in the direction of arrow shown in the figure.

Note:

Pull out from the head of the rubber assembly windshield wiper (the part with a bulge).



2. Remove the vertebra from the blade rubber.



WIPER AND WASHER SYSTEMS > Wiper Blade

ASSEMBLY

1. Install the vertebra to the blade rubber.

Note:

Align the recesses of the vertebra with the protruding parts of the blade rubber.

2. Install the rubber assembly windshield wiper on the blade assembly windshield.

Caution:

Push the rubber assembly windshield wiper strongly into the blade fitting area, and fit completely into the recess of the rubber assembly windshield wiper.

Note:

Install it on the blade assembly windshield so that the head of the rubber assembly windshield wiper (the part with a bulge) faces the arm axle side.

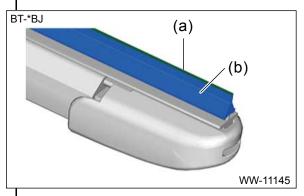
WIPER AND WASHER SYSTEMS > Wiper Blade

INSPECTION

1. Check and clean the rubber assembly windshield wiper.

Caution:

- Do not use organic solvent-based cleaner when cleaning rubber parts in order to avoid rubber part deterioration.
- Do not use the cleaner that includes silicone oil. Failure to do so can cause chattering sound.
- Clean rubber edge (a) using a soft cloth or a sponge dampened with washer fluid or mild synthetic detergent that is diluted two times or more. Wiping rubber lip (b) results in peeling of the black coating component, causing wiper chattering.



• Check that the rubber is firmly attached after cleaning.

Replace the blade rubber if rubber part hardening, deformation or damage is found. Replace the rubber assembly windshield wiper if vertebra deformation or damage is found.

- 2. Operate the washer system to check if a chattering sound or insufficient wiping occurs.
- **3.** If a chattering sound or insufficient wiping occurs, perform the following procedures.
 - (1) Make sure that the blade assembly windshield wiper is not deformed and the movable part moves smoothly.
 - (2) Remove oil film and dirt from the glass.

Caution:

- When powder-type glass cleaner is used, use after having been dissolved in water sufficiently. If it is used in less water, the glass surface may be damaged.
- Clean the glass surface using a soft cloth or sponge with glass cleaner.
- (3) Operate the wiper again. If a chattering sound or insufficient wiping occurs, perform the procedures again.
- **4.** If defective is not improved after performing step 1 without replacing the blade rubber or the rubber assembly windshield wiper, replace the blade rubber or the rubber assembly windshield wiper with a new part.
- **5.** If defective is still not improved after operating the washer system again, replace the blade assembly windshield wiper with a new part.

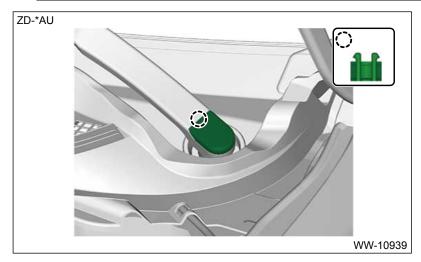
WIPER AND WASHER SYSTEMS > Front Wiper Arm

REMOVAL

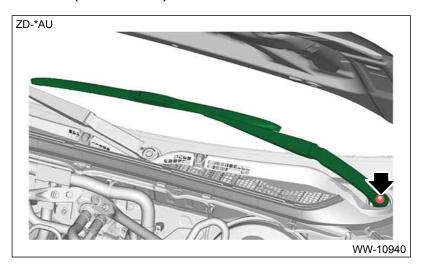
1. Release the claw and remove the cover windshield wiper arm.

Note:

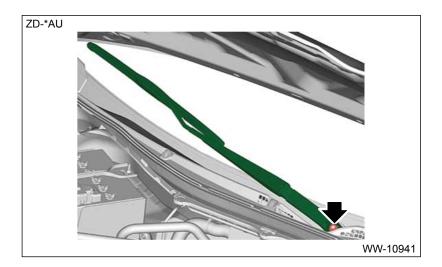
When using a tool, apply protective tape around a thin flat tip screwdriver.



- 2. Remove the nuts, and remove the arm assembly windshield wiper.
 - LH (Screwdriver)



• RH (Assistor)



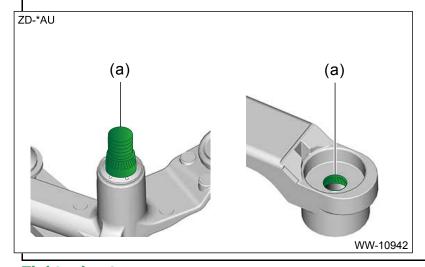
WIPER AND WASHER SYSTEMS > Front Wiper Arm

INSTALLATION

1. Align the blade assembly windshield wiper with the wiper set mark of the windshield glass to install the arm assembly windshield wiper.

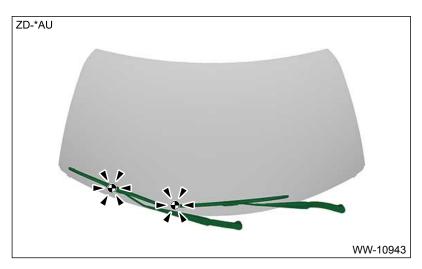
Note:

If reusing the arm assembly windshield wiper and link assembly windshield wiper, clean the serrations (a).



Tightening torque:

22 N·m (2.2 kgf-m, 16.2 ft-lb)



- 2. Install the cover windshield wiper arm.
- **3.** Operate the windshield wiper once to check that the stop position is aligned with the wiper set mark.

WIPER AND WASHER SYSTEMS > Front Wiper Arm

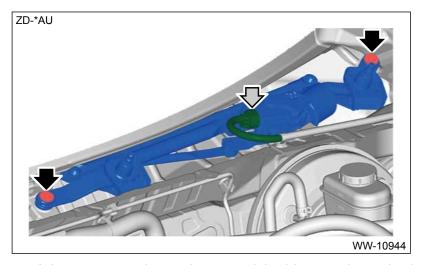
ADJUSTMENT

- 1. Operate the windshield wiper once.
- 2. If the stop position is not aligning with the wiper set mark, remove the arm assembly windshield wiper, and install by aligning with the wiper set mark. Ref. to WIPER AND WASHER SYSTEMS>Front Wiper Arm.

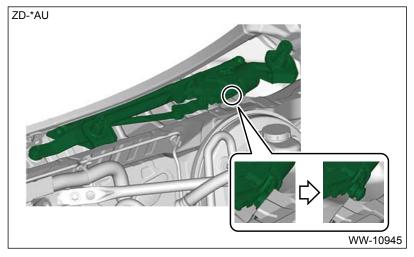
WIPER AND WASHER SYSTEMS > Front Wiper Motor and Link

REMOVAL

- 1. Disconnect the ground terminal from battery sensor. Ref. to REPAIR CONTENTS > NOTE > BATTERY.
- **2.** Remove the arm assembly windshield wiper. Ref. to WIPER AND WASHER SYSTEMS>Front Wiper Arm>REMOVAL.
- **3.** Remove the cowl panel side and the cowl panel assembly. Ref. to EXTERIOR/INTERIOR TRIM>Cowl Panel>REMOVAL.
- 4. Remove the link assembly windshield wiper.
 - (1) Disconnect the connector and remove the bolts.



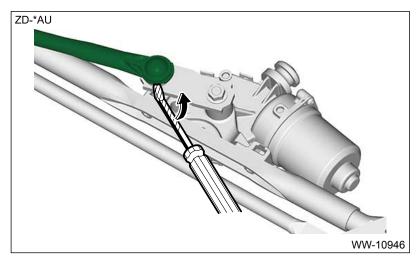
(2) Disengage the cushion windshield wiper from the bracket of the body to remove the link assembly windshield wiper, as shown in the figure.



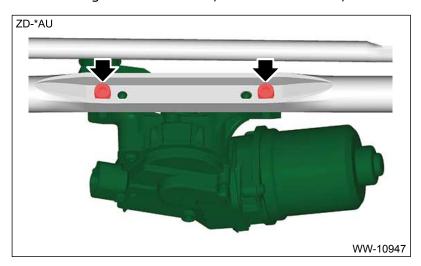
- 5. Remove the motor assembly windshield wiper.
 - (1) Using a crowbar wrapped with protective tape, disconnect the crank arm pivot of the link assembly windshield wiper.

Caution:

Be careful not to damage the crank arm boot.



(2) Using the TORX $^{(2)}$ T30, remove the bolts, and remove the motor assembly windshield wiper.



WIPER AND WASHER SYSTEMS > Front Wiper Motor and Link

INSTALLATION

- 1. Install the motor assembly windshield wiper.
 - (1) Using the TORX $^{\mbox{\scriptsize (8)}}$ T30, install the motor assembly windshield wiper.

Tightening torque:

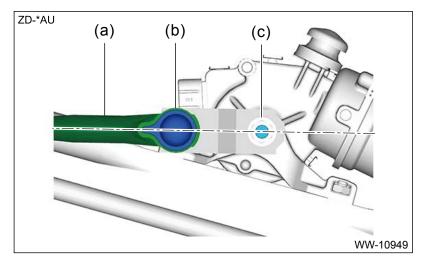
7.5 N·m (0.8 kgf-m, 5.5 ft-lb)

(2) Apply grease to the crank arm pivot of the motor assembly windshield wiper.

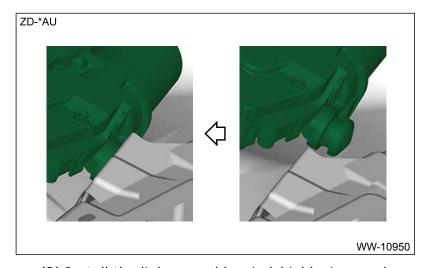
Preparation items:

Grease: Multemp SA grease or equivalent

(3) Connect the link assembly windshield wiper rod (a) so that the link assembly windshield wiper rod (a), crank arm pivot (b), and the motor assembly windshield wiper shaft part and nut (c) are aligned straight, as shown in the figure.



- 2. Install the link assembly windshield wiper.
 - (1) Engage the cushion windshield wiper with the bracket of the body, as shown in the figure.



(2) Install the link assembly windshield wiper and connect the connector.

Tightening torque:

6 N·m (0.6 kgf-m, 4.4 ft-lb)

- **3.** Connect the ground terminal to battery sensor. Ref. to REPAIR CONTENTS > NOTE > BATTERY.
- **4.** Operate the front wiper switch of the switch assembly combination wiper once, and stop the motor assembly windshield wiper at the automatic stop position.
- **5.** Install the cowl panel assembly and the cowl panel side. Ref. to EXTERIOR/INTERIOR TRIM>Cowl Panel>INSTALLATION.
- **6.** Install the arm assembly windshield wiper. Ref. to WIPER AND WASHER SYSTEMS>Front Wiper Arm>INSTALLATION.

WIPER AND WASHER SYSTEMS > Front Wiper Motor and Link

INSPECTION

1. CHECK MOTOR OPERATION

- 1. Turn the front wiper switch of the switch assembly combination wiper to ON.
- 2. Turn the front wiper switch of the switch assembly combination wiper to OFF, and check that the motor

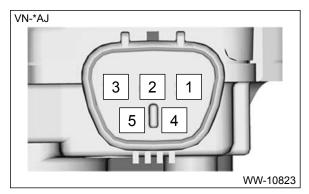
- stops at the automatic stop position.
- **3.** If any faulty is found in the inspection, inspect or replace the wiper relay unit. Ref. to WIPER AND WASHER SYSTEMS>Wiper Relay Unit.

2. CHECK MOTOR UNIT

1. Check the motor operation when battery voltage is applied between the connector terminals.

Caution:

Fix the motor to prevent the motor from being shorted by moving during operation.



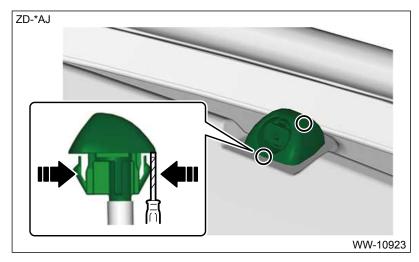
Terminal No.	Inspection conditions	Specification
5 (+) - 4 (-)	Apply battery voltage.	At low speed
3 (+) - 4 (-)		At high speed

2. If it does not operate normally, replace the motor assembly windshield wiper.

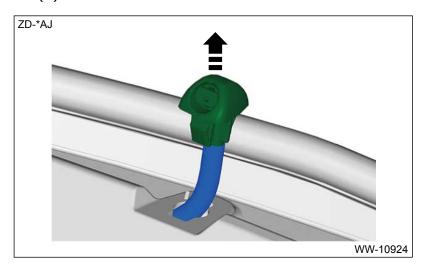
WIPER AND WASHER SYSTEMS > Front Washer

REMOVAL

- **1.** Remove the arm assembly windshield wiper. Ref. to WIPER AND WASHER SYSTEMS>Front Wiper Arm>REMOVAL.
- 2. Remove the cowl panel side and the cowl panel assembly. Ref. to EXTERIOR/INTERIOR TRIM>Cowl Panel>REMOVAL.
- 3. Remove the nozzle windshield washer.
 - (1) Release the claws as shown in the figure, using a flat tip screwdriver or similar tool wrapped with protection tape.



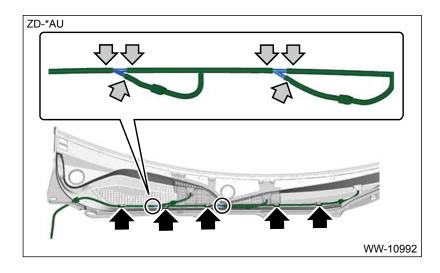
- (2) Pull out the nozzle windshield washer.
- (3) Remove the nozzle windshield washer from the hose assembly windshield washer.



4. Remove the hose assembly windshield washer from the cowl panel assembly clamps, and disconnect it. Ref. to WIPER AND WASHER SYSTEMS>General Description>LOCATION > WASHER SYSTEM.

Note:

Perform this procedure only when required.



WIPER AND WASHER SYSTEMS > Front Washer

INSTALLATION

- 1. Install the hose assembly windshield washer. Ref. to WIPER AND WASHER SYSTEMS>General Description>LOCATION > WASHER SYSTEM.
- 2. Install the nozzle windshield washer.
 - (1) Connect the nozzle windshield washer to the hose assembly windshield washer.
 - (2) Install the nozzle windshield washer.
- 3. Install the cowl panel assembly and the cowl panel side. Ref. to EXTERIOR/INTERIOR TRIM>Cowl Panel>INSTALLATION.
- **4.** Install the arm assembly windshield wiper. Ref. to WIPER AND WASHER SYSTEMS>Front Wiper Arm>INSTALLATION.
- **5.** Check the position of the nozzle windshield washer. Ref. to WIPER AND WASHER SYSTEMS>Front Washer>INSPECTION > INSPECTING THE SPRAY POSITION.

WIPER AND WASHER SYSTEMS > Front Washer

INSPECTION

1. VISUAL INSPECTION

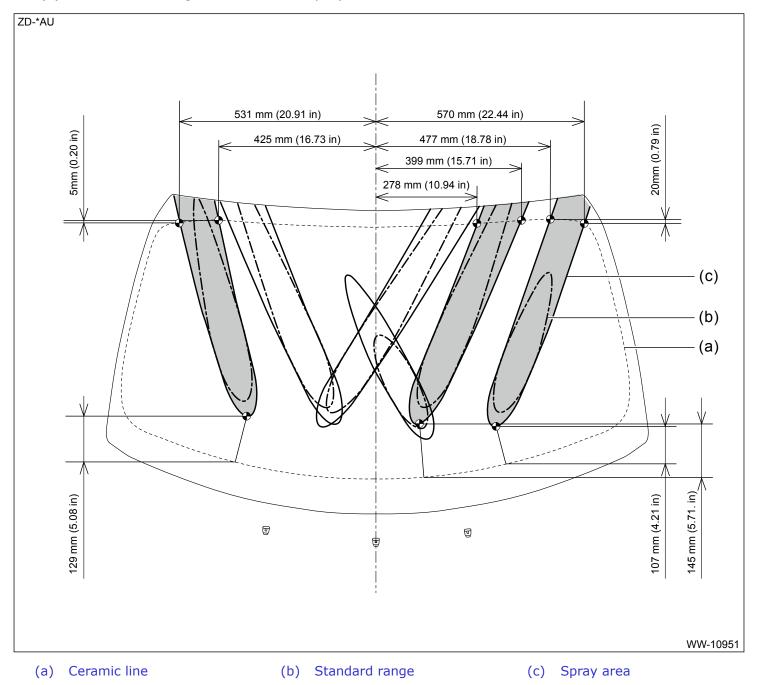
Check for the following items, and if any malfunction is found, replace the corresponding part.

- Make sure the nozzle windshield washer and the hose assembly windshield washer are not clogged.
- Make sure the hose assembly windshield washer is not bent.

2. INSPECTING THE SPRAY POSITION

- 1. Turn the front wiper switch of the switch assembly combination wiper to the OFF position.
- 2. While the vehicle is running, check that the washer spray position is as shown in the figure.
 - (1) Route a piece of string or similar from the outside of the glass so that it passes through the center of the inner mirror mounting portion and the center of the grille front defroster, and then fix it on the glass with adhesive tape.
 - (2) Make adjustment marks shown in the figure using a water-based pen.

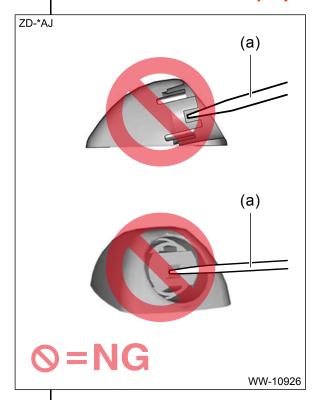
(3) Remove the string or similar, then spray washer fluid.



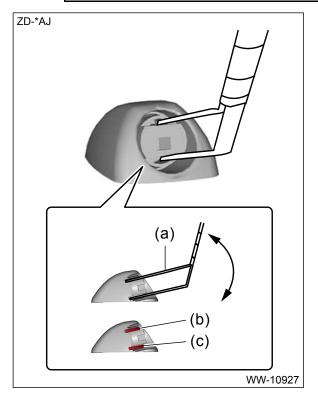
- **3.** After inspection, if the spray position is significantly out of the specified range, adjust the nozzle windshield washer.
 - (1) Create the washer nozzle adjustment tool. Ref. to WIPER AND WASHER SYSTEMS>General Description>PREPARATION TOOL > HANDMADE TOOL.
 - (2) Insert the washer nozzle adjustment tool into the upper side and lower side of the nozzle windshield washer, and adjust the spray position.

Caution:

Washer nozzle is made of resin. Do not insert the precision screwdriver or equivalent into the discharge port. If it is inserted, the discharge port can be deformed, and washer fluid cannot be sprayed.



(a) Precise screwdriver, etc.



(a) Washer nozzle adjustment tool

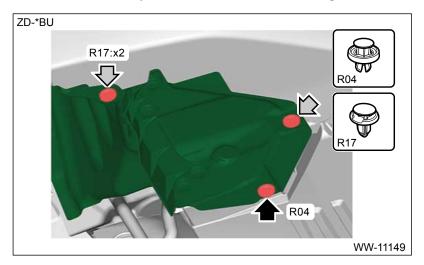
- (b) Upside
- (c) Downside
 - (3) When the spray position cannot be adjusted, replace the nozzle windshield washer.
- **4.** When adjustment is completed, thoroughly clean the glass.

WIPER AND WASHER SYSTEMS > Wiper Relay Unit

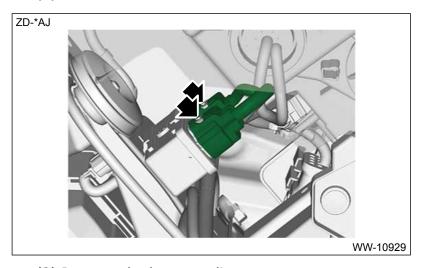
REMOVAL



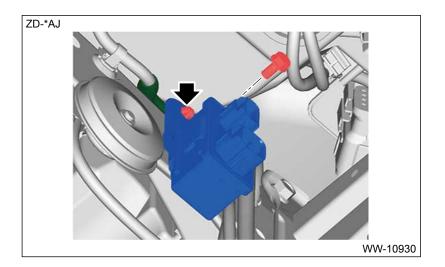
- 1. Disconnect the ground terminal from battery sensor. Ref. to REPAIR CONTENTS > NOTE > BATTERY.
- **2.** Lift up the vehicle.
- **3.** Remove the clips, and turn over the mud guard front RH.



- **4.** Remove the wiper relay unit.
 - (1) Disconnect connectors.



- (2) Remove the harness clip.
- (3) Remove the bolts, and then remove the wiper relay unit.



WIPER AND WASHER SYSTEMS > Wiper Relay Unit

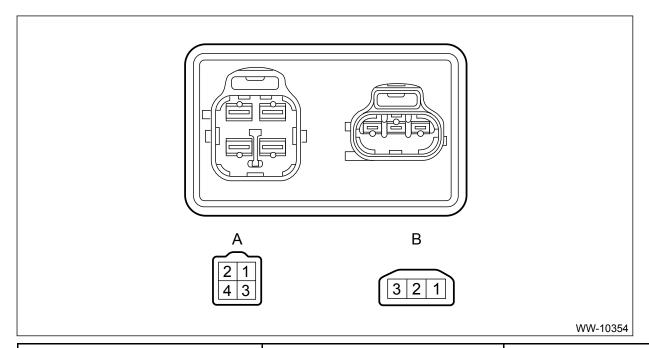
INSTALLATION

- **1.** Install the wiper relay unit, and connect each connector.
 - **Tightening torque:**
 - 7.5 N·m (0.8 kgf-m, 5.5 ft-lb)
- 2. Install the mud guard front RH. Ref. to EXTERIOR/INTERIOR TRIM>Mud Guard>INSTALLATION.
- 3. Lower the vehicle.
- **4.** Connect the ground terminal to battery sensor. Ref. to REPAIR CONTENTS > NOTE > BATTERY.

WIPER AND WASHER SYSTEMS > Wiper Relay Unit

INSPECTION

1. Measure the resistance between connector terminals.



Inspection conditions	Terminal No.	Standard

Always	A1 — A2	Less than 1 Ω
	A4 — A1	$1~\text{M}\Omega$ or more
	A3 — A4	1 M Ω or more
Apply battery voltage between terminals B3 (+) and B2 (-). (Lo output condition)	A1 - A2	1 M Ω or more
	A4 — A1	Less than 1 Ω
	A3 — A4	1 M Ω or more
Apply battery voltage between terminals B1 (+) and B2 (-). (Hi output condition)	A1 - A2	1 M Ω or more
	A4 — A1	$1~\text{M}\Omega$ or more
	A3 — A4	Less than 1 Ω

2. If any faulty is found in the inspection, replace the wiper relay unit.